

Committee on Resources

resources.committee@mail.house.gov

[Home](#) [Press Gallery](#) [Subcommittees](#) [Issues](#) [Legislation](#) [Hearing Archives](#)

U.S. House Subcommittee on energy and mineral resources

Edward M. Kelly – Head of North American gas and power consulting, wood mackenzie global consultants

Testimony – june 19, 2003

6/19/2003

cc:

Good morning. My name is Ed Kelly, and my position is head of North American gas and power consulting for Wood Mackenzie Global Consultants. Wood Mackenzie is a worldwide energy consulting firm based in Edinburgh, Scotland (with US offices in Houston and Boston) focusing on oil and gas producing information, as well as energy markets more generally, including natural gas. While Wood Mackenzie serves the energy industry, we are an independent firm with clients in all sectors of the industry itself as well as outside investors, and are independent of any particular sector of the energy industry.

Before Wood Mackenzie I worked for over 10 years in the natural gas practice at Cambridge Energy Research Associates or CERA, the last three as director of research for North American Gas. Prior to that I held a variety of strategic planning and analysis positions in the natural gas pipeline industry. I very much appreciate the opportunity to speak with you today about a crisis that is painful to energy consumers to be sure, but also for many sectors of the gas industry.

What is occurring now can be characterized as a painful period of adjustment as a commodity moves from relative abundance to relative scarcity. While this pain is felt by many, especially low income individuals and families dependent upon gas for heat, as well as industrial end users dependent upon natural gas to create their products, adjustments are occurring in a number of ways. Drilling activity has increased and is likely to continue to do so, and a number of new import facilities are in various stages of the investment and planning process, and conservation is occurring. None of these activities will alleviate the shortfall immediately or even within the next 3-5 years, but all are necessary and should be encouraged.

I would like to use my brief time to make a few points regarding this crisis.

I. High Prices Are Here to Stay – For This Decade and Perhaps Even Longer

The first point I would like to make is that this is not a simple commodity cycle. High prices are likely to endure, and imports will continue to increase in share of the overall North American supply for natural gas. While a large resource base – by some estimates approximately 50 years worth of current consumption – is estimated to exist underground, the difficulty of finding and developing this resource base is increasing. In addition, production in many major basins is already in decline, and the deep water Gulf of Mexico, one basin still increasing, will enter decline within the next 3 years. That leaves the Rockies as the only onshore US basin not in decline, and production increases there will not fully offset decline elsewhere.

These declines in production have occurred even as the US has already built the next generation of power plants – nearly all fueled by natural gas. As the economy grows, power demand grows, and with it gas consumption as more power generation facilities are dispatched. Under normal economic growth or approximately 3 percent gas demand would grow by approximately .75 to 1.0 billion cubic feet per day on average in the US. The average price of natural gas has therefore increased from the \$1.50 - \$2.50 per Mcf (or 1,000 cubic feet) level, in place for most of the 1980s and 1990s, to the \$3.50 - \$5.50 per Mcf level that Wood Mackenzie expects for the remainder of this decade, at least.

These higher prices are here to stay until

a) an import system can be developed that is capable of transporting large quantities of gas to the US, and

b) major new native sources of supply can be brought to market. However, both imports and new domestic supply sources – likely from the arctic - will require both time and capital.

Demand pressures are here and now, while supplies declined this year and may struggle to increase through 2005, declining thereafter. New imports and arctic supplies, however, are 5-10 years away, meaning that gas is likely to remain expensive for at least the remainder of this decade. During this time price – willingness to pay - will remain the efficient and best means of determining who chooses to burn gas and who does not.

II. Active Drilling in the US is Still Critically Important.

My second point is that, despite the inevitability of increasing imports, consistent and higher levels of drilling in the US are critical to minimize the pain that high prices will bring. The difference in pain between a \$3.50 average price and a \$5.50 price is large, and represents many thousands of jobs and between \$20-\$25 billion in disposable income to residences and small businesses. Before imports can increase substantially (the end of this decade), and before arctic gas can reach the market in large quantities (after 2010), US and Canadian drilling levels will largely determine supply on the margin, or whether the gas price is closer to \$3.50 or \$5.50 in wholesale markets.

The market has gained some valuable and hard-won information over the past 3 years as drilling has moved up and down in response to volatile prices. It is now clear that drilling activity of 550-700 rigs searching for gas will not support US production, and a steep decline in production will develop within a year if drilling activity stays that low. Drilling activity represented by 800 or more active rigs in use, however, will at least arrest the pace of decline in production, buying end users valuable time. Rig activity of 900 or more rigs may, for a while, actually increase productive capability in the US, but not likely by much. Two years ago for example the industry employed between 1000 and 1100 rigs actively searching for gas for a 15 week period (and employed more than 900 rigs for an additional 22 weeks). However, the result was an increase in US productive capability of less than 4 percent the following year, followed by decline later as activity dropped off. I hope that a more sustained level of greater activity as high prices endure will do more, but so far there remains a long way to go. Gas-directed rig activity just broached the 900 level again last week, for the first time since 2001.

III. Anything that Impedes Drilling Activity will Result in a Quick Supply Decline

For two decades technology advances and imports enabled energy costs to decline even as greater regulatory and environmental scrutiny was placed on US drilling activity. A technological revolution in drilling in the early 1990s enabled US natural gas productive capability to increase even as natural gas prices held at very low levels. However, this trend no longer holds. Production from existing wells is declining at a faster rate, as new discoveries become smaller, and the same new drilling and development techniques allow quicker emptying of reservoirs.

The major significance, however, is that greater levels of drilling activity are required to sustain production, and any decline in drilling will be accompanied by an increasingly sharp and immediate decline in productive capability. Further restrictions on drilling activity will be accompanied increasingly quickly by higher real energy costs, and increasing pain in consumers' pocketbooks. While I will not attempt to judge the proper tradeoff between drilling and the environment, policymakers should be aware of this new mathematic reality. However noble the purposes, increased restrictions on drilling activity have undoubtedly already played some role in the higher energy costs now facing consumers. Added regulation and restrictions no longer come for free.

Will another technology advance at some point allow both environmentally pure and cheap energy? No one can say for sure, but I am not aware of any on the horizon, yet. Is there some technology in energy supply or power generation that may eventually make the competition among fossil fuel sources moot? Again, no one can say with certainty – I hope so. The greatest progress at the moment appears to be occurring in end use efficiency – with investment encouraged by price – and in transport systems.

On the supply side, perhaps the greatest recent shift has occurred in the cost of LNG (liquefied natural gas) transport and delivery, with the import costs having declined by approximately 40 percent over the past 2 decades.

IV. LNG is Still Years Away from Alleviating the Supply Shortfall in the US

It is absolutely correct to say that LNG is increasing in importance in the US natural gas supply mix, and that it is a critical piece of our supply future. However, it is important to keep in mind that the US faces years of supply challenge before either LNG or arctic supplies can come to the rescue for natural gas consumers. As I've said, demand pressure will remain high as economic growth drives increased demand for electricity, and natural gas supplies the vast majority of that power demand growth. Even as this demand pressure grows, US productive capability that will begin to decline within three to four years.

Meanwhile, LNG development decisions occur in an international market. The US must compete with other markets for LNG supplies, and each producer decides whether or not to liquefy natural gas reserves in the context of returns available to investment in a global energy market. For example, investing in liquefying gas reserves to ship to the US or elsewhere competes with global drilling opportunities as well as with pipelines or any other method of monetizing the gas reserves. Under the most favorable circumstances, the LNG value chain – from liquefaction of remote reserves to shipping to regasification – usually takes 5-7 years to develop.

Even though U.S. prices are now well above the approximately \$3.50 per Mcf that LNG costs to deliver into the US from many sources (depending upon shipping distances, real estate costs, royalty regimes, and other factors), investment in LNG delivery into the US is not guaranteed. A fragile chain of investments must occur, with delay possible at any point. While increasing LNG imports are a near certainty, this growth should be put into perspective. Wood Mackenzie believes that it will be 10 years or more before LNG represents even 10 percent of US supplies on an annual basis. By 2010, LNG imports will be approaching 6 billion cubic feet (Bcf) per day – more than five times their current level (expected average of 1.1 Bcf per day for 2003) – but representing less than 10 percent of US supply in a market of near 25.0 trillion cubic feet (Tcf) in size.

Reaching even this level of imports will require timely permitting and regulatory approvals, as well as consistent decisions by major producers and end users to move forward with several billions of dollars of capital investment in and near the US. As in US drilling, anything that slows this process, whether from regulators or market participants themselves, will prolong the period of high and volatile natural gas prices in the US.

IV. Natural gas supplies from the Arctic are also Important – for the Next Decade

Supplies from Alaska and arctic Canada are likely to play a critical role in balancing the continental natural gas market, but will do little to alleviate the current crisis. Alaskan supplies pose an especially challenging dilemma for producers, requiring huge investments (estimates range from \$15 - \$20 billion) based upon the current situation in a notoriously fickle and volatile market. As such, periods of low prices, such as occurred in 2002, will delay these development efforts, as will the availability of attractive alternative investments. In my experience Alaskan gas has been expected to enter the market between 7 and 20 + years in the future – and now the figure is around 10-15 years, depending on the source. Alaskan gas would represent an immediate infusion of supply covering approximately 3-4 years of demand growth in the US market. LNG imports, on the other hand, can be phased in, and require smaller increments of investment. Ultimately, however, both growing LNG imports and Alaskan gas are likely to be required, as is increased drilling. All forms of potential supply are necessary.

VI. In the Meantime, Demand Efficiency and Conservation will be Important on the Margin

With increasing demand, declining US supply, and a necessary delay before LNG imports and arctic gas can help fill the supply gap, the US natural gas market needs both sustained high levels of drilling in the US and increases in end use efficiency to keep itself in balance. Conservation is occurring as more and more consumers become aware of the higher real costs of energy, and efficiency is increasing as newer appliances replace old and as more advanced materials are used in construction and industrial applications. California power demand during that crisis, for example, dropped by 3 percent based on voluntary conservation, and by another 7 percent as a result of high prices. This conservation was a critical component of the easing of the power crisis in that state.

Natural gas prices are likely to remain high enough to encourage conservation for the foreseeable future. For some types of end use – primarily industrial and power generation - conservation and the burning of alternate fuels already has an important influence on price.

VII. What Government Can Do – Avoid Harm

To make this adjustment from relative surplus to scarcity in the natural gas market as easy as possible for as many as possible, government can:

1) As much as possible, at least avoid increasing the regulatory/permitting burdens on producers. Again, that which either delays or restricts drilling will quickly increase the pain felt by natural gas consumers, and this increasingly includes those paying electricity bills. Producers and others in the natural gas industry are keenly aware that markets are being lost to alternative fuels, to conservation, and even to industrial closings and relocations. As such, there is an industry-wide effort underway to attempt to build supplies in North America. The proper level of environmental and regulatory oversight will always be in dispute, and this dispute is legitimate and healthy. However, the need for sustained and timely efforts to increase supply, and the quick drop in supply that will occur if these efforts falter, should be taken into account by regulatory/political decision-makers.

2) Clarify the responsibility for supply planning. Largely a function of the states, supply planning is a critical role in the natural gas and power markets, and especially for infrastructure development. Under a purely market system supply would be allocated by price, planning would be done individually based upon expectations for price, and price volatility would be an allowed and expected part of the market landscape. However, the US system is now far from this. Many utilities are caught in an ambiguous position – regulators like greater competition but also like someone in the end to be responsible for energy supply. Utilities in the future may or may not be responsible for ensuring that energy infrastructure, whether gas pipelines or power generation and transmission, is adequate within their service territories. In addition, utilities are being exposed to a greater degree of political risk than ever before in the US as energy purchasing decisions, even honest ones, are constantly second guessed. This challenging environment makes the signing of long-term contracts, critical for the development of gas pipelines, power generation, and especially LNG import facilities, more difficult.

3) Help lead a reasoned debate on the environment/energy cost tradeoff. Society may in fact desire higher real energy costs in return for greater environmental purity, but such decisions should occur in a reasoned atmosphere with as many facts on the table as possible. Technology has lowered the costs of environmental cleanliness for several fossil fuels, but there has been limited acknowledgement of this fact. For example, coal generation can be made much cleaner than it has been, at lower overall cost than gas-fired generation, and nuclear generation and clean liquid fuels are an increasingly important and clean options in the future energy mix. However, many opinions appear fixed based upon outdated impressions of environmental costs associated with these energy forms.

4) Aid low-income end users that have little alternative for heating. Funding for the LIHEAP program has been increased in recent years, and the need for programs such as this should be continually monitored.

5) Avoid price controls. Price controls would prove harmful to producers and consumers alike, would place huge burdens on regulators themselves, and, if they had any effect, would result in an immediate drop in supply. This would lead to a chain of unintended consequences, likely including crude centrally directed rationing schemes, as painful to most as the current price-based rationing.

The US has grown accustomed to relatively abundant, domestic and Canadian natural gas supplies, at relatively low cost. However, the reliance upon natural gas for the next generation of power plants, just as natural gas supplies in the US are hitting a peak and entering a decline, has shifted this commodity from surplus to scarcity. This situation is unlikely to reverse. A certain amount of pain during this adjustment period is unavoidable, but, contrary to many reports, in some important ways the market is working. Drilling has increased and is likely to continue to do so, and investments in import facilities are ramping up. In the meantime, voluntary willingness to pay is determining who buys gas and who does not, and end use conservation and efficiency are increasing.

High prices are already doing as much as any law or regulation could to make this painful adjustment period as short as possible, and to encourage investments in new technologies for both supply and demand. Ultimately, these prices even hasten economic alternatives to fossil fuels.

I appreciate the opportunity to appear today, and thank you for your time.

Edward M. (Ed) Kelly

Head of North American Gas and Power Consulting

Wood Mackenzie Global Consultants